UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,321	09/02/2003	Robert L. Lawton	BX/TF-101.P.1	3513

46251 7590 06/23/2006

T. D. FOSTER
12760 HIGH BLUFF DRIVE, SUITE 300
SAN DIEGO, CA 92130

EXAMINER
FORMAN, BETTY J

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/653,321	LAWTON, ROBERT L.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,15-17,19-33,37-39 and 41-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,15-17,19-33,37-39 and 41-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL ACTION

Status of the Claims

1. This action is in response to papers filed 5 April 2006 in which claims 1, 3, 15, 21-23, 26, 37-38, 43-44 were amended and claims 12-14, 18, 34-36, 40, 45-46 were canceled. All of the amendments have been thoroughly reviewed and entered.

The previous rejections in the Office Action dated 1 February 2006 are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection, necessitated by the amendments, are discussed.

Claims 1-11, 15-17, 19-33, 37-39, 41-44 are under prosecution.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6-10, 15-17, 22-25, 28-32, 37-39 and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Ullman et al (U.S. Patent No. 6,797,481, filed 17 October 2000).

Regarding Claims 1 & 23, Ullman et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct comprising a nucleic acid label portion (Column 8, lines 15-27) and an antibody which specifically recognizes and binds said compound of interest (Column 6, lines 61-65), mixing, in solution, said binding construct with said sample to form construct-compound complexes, providing one or more surface-bound non-nucleic acid targets capable of specifically binding to the antibody, introducing the surface-bound target to the solution containing the complexes, removing surface-bound mimic complexed with antibodies and detecting the presence or absence of said label portion of said binding construct to detect the presence of the compound of interest (Example 1).

Regarding Claims 2 & 24, Ullman et al disclose the surface bearing the target analog is selected from matrices e.g. particles, powers, beads, membranes, filters etc (Column 12, lines 15-67).

Regarding Claims 3 & 25, Ullman et al disclose the surface comprises particles (Column 12, line 56).

Regarding Claims 6-10 & 28-32, Ullman et al teach said detection of the presence or absence of the target is via detection of nucleic acid-labeled antibody wherein the nucleic acid label is amplified for detection (Column 8, lines 20-30_

Regarding Claims 15-17 & 37-39, Ullman et al teach the method wherein said recognition portion comprises an antibody fragment e.g. Fab (Column 6, line 62-Column 7, line 8) attached via sulfhydryl (Column 9, line 36-46).

Regarding Claims 22 & 44, Ullman et al disclose the method wherein multiple binding constructs are provided for multiple analyte detection (Abstract and Claim 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-11, 15-17, 19, 21-33, 37-39, 41, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piran et al (U.S. Patent No. 5,705,338, issued 6 January 1998) in view of Hendrickson et al (Nucleic Acids Research, 1995, 522-529).

Regarding Claims 1 & 23, Piran et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct comprising a label portion and an antibody which specifically recognizes and binds said compound of interest, mixing, in solution, said binding construct with said sample to form construct-compound complexes, providing one or more surface-bound non-nucleic acid targets (e.g. mimic) capable of specifically binding to the antibody, introducing the surface-bound target to the solution containing the complexes, removing surface-bound mimic complexed with antibodies and detecting the presence or absence of said label portion of said binding construct to detect the presence of the compound of interest (Fig. 1-4 and Abstract). Piran et al differs from the instantly claimed invention in that the reference does not teach a nucleic acid label or detection of the nucleic acid label. However, nucleic acid labeled target-specific antibodies for detection of target were well known in the art at the time the claimed invention was made as taught by Hendrickson et al Abstract).

Hendrickson et al teach a method for detecting a non-nucleic acid target by providing a binding construct comprising an antibody portion capable of specifically binding to the target and a nucleic acid label (Fig. 2) wherein "enormous amplification" of the nucleic acid label via PCR and the ability to differentiate amplified DNAs provides for "ultra-sensitive" multianalyte detection (Abstract). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the nucleic acid label to the labeled antibodies of Piran et al. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success and for the expected benefit of obtaining "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

Regarding Claims 2 & 24, Piran et al disclose the surface bearing the target mimic is selected from matrices e.g. particles, powers, beads, membranes, filters etc (Column 8, line 58-Column 9, line 4).

Regarding Claims 3 & 25, Piran et al disclose the surface comprises particles (Column 8, lines 58-65).

Regarding Claims 4 & 26, Piran et al discloses the surface comprises magnetic particles (Column 8, lines 58-60).

Regarding Claims 5 & 27, Piran et al discloses the method wherein separation is via a magnet (their immobilization surface comprises particles magnetic (Column 9, lines 5-7).

Regarding Claims 6-11 & 28-33, Piran et al teach said detection of the presence or absence of the target is via detection of labeled antibody, but do not teach the label is a nucleic acid. However, Hendrickson et al teach the similar method wherein detection of the analyte is via detection of the nucleic acid label of the antibody wherein the detection is via PCR whereby "ultra-sensitive" multianalyte detection is obtained (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the nucleic acid label to the labeled antibodies of Piran et al. One of ordinary skill in the art would have been motivated to do so with a reasonable

expectation of success and for the expected benefit of obtaining "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

Regarding Claims 15-16 & 37-38, Piran et al teach the method wherein said recognition portion comprises an antibody (Fig. 1). The claim language "comprises a single chain antibody variable region" encompasses additional components contained in the antibody of Piran. Hence, Piran et al teach an antibody "comprising" a Fab fragment.

Regarding Claims 17 & 39, Piran et al teach the method wherein label and label attachment uses techniques known in the art (Column 7, lines 15-32) but do not specifically teach nucleic acid label attachment via a sulfhydryl group on the antibody. Hendrickson et al teach the similar method wherein the antibody is attached to the nucleic acid label via sulfhydryl group (page 524). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to attach the label of Hendrickson et al to the antibody of Piran et al via sulfhydryl. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success based on the suggestion of Piran et al and the well known technique illustrated by Hendrickson et al (page 524).

Regarding Claims 19 & 41, Hendrickson et al teach the nucleic acid label comprises DNA (page 524).

Regarding Claims 21 & 43, Hendrickson et al teach nucleic acid labeled-antibodies for detection of analytes specifically bound to the antibodies via PCR amplification of the nucleic acid label. While they do not specifically teach the nucleic acid is selected so as to not represent a sequence naturally found in the sample, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to select non-sample sequences because amplification of the label could also amplify sample sequences thereby leading to false positive detection of the antibody-bound analyte.

Regarding Claims 22 & 44, Piran et al are silent regarding multiple binding constructs. However, Hendrickson et al teach the similar method wherein multiple analytes are detected

with "ultra" sensitivity (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the multi-analyte detection of Hendrickson et al to the method of Piran et al for the expected benefit of obtaining "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

6. Claims 20-21 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piran et al (U.S. Patent No. 5,705,338, issued 6 January 1998) in view of Hendrickson et al (Nucleic Acids Research, 1995, 522-529) as applied to Claims 1 and 23 above and further in view of Baez et al (U.S. Patent No. 6,511,809, filed 16 May 2001).

Regarding Claims 20 & 42, Piran et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct comprising a label portion and an antibody which specifically recognizes and binds said compound of interest, mixing, in solution, said binding construct with said sample to form construct-compound complexes, providing one or more surface-bound non-nucleic acid targets (e.g. mimic) capable of specifically binding to the antibody, introducing the surface-bound target to the solution containing the complexes, removing surface-bound mimic complexed with antibodies and detecting the presence or absence of said label portion of said binding construct to detect the presence of the compound of interest (Fig. 1-4 and Abstract). Piran et al differs from the instantly claimed invention in that the reference does not teach a nucleic acid label or detection of the nucleic acid label. However, nucleic acid labeled target-specific antibodies for detection of target were well known in the art at the time the claimed invention was made as taught by Hendrickson et al Abstract).

Hendrickson et al teach a method for detecting a non-nucleic acid target by providing a binding construct comprising an antibody portion capable of specifically binding to the target and a nucleic acid label (Fig. 2) wherein "enormous amplification" of the nucleic acid label via PCR and the ability to differentiate amplified DNAs provides for "ultra-sensitive" multianalyte detection (Abstract). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the nucleic acid label to the labeled antibodies of Piran et al. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success and for the expected benefit of obtaining "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

Hendrickson et al do not specifically teach the nucleic acid label is RNA, however Baez et al teach the similar method wherein DNA and RNA function as nucleic acid labels (Column 5, Lines 35-37). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the DNA label of Hendrickson et al with the RNA as taught by Baez et al. One of ordinary skill in the art would have been motivated to do so based on the equivalent functionality taught by Baez et al (Column 5, lines 35-37).

7. Claims 4-5 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ullman et al (U.S. Patent No. 6,797,481, filed 17 October 2000) in view of Piran et al (U.S. Patent No. 5,705,338, issued 6 January 1998).

Regarding Claims 4-5 and 26-27, Ullman et al teach a method for detecting a non-nucleic acid compound of interest in a sample comprising the steps of (a) providing a binding construct comprising a nucleic acid label portion (Column 8, lines 15-27) and an antibody which specifically recognizes and binds said compound of interest (Column 6, lines 61-65), mixing, in solution, said binding construct with said sample to form construct-compound complexes, providing one or more surface-bound non-nucleic acid targets capable of

specifically binding to the antibody, introducing the surface-bound target to the solution containing the complexes, removing surface-bound mimic complexed with antibodies and detecting the presence or absence of said label portion of said binding construct to detect the presence of the compound of interest (Example 1) wherein the surface is a particle as known in the art (Column 12, line 56-Column 13, line 5) but they are silent regarding magnetic particle and magnetic means for complex separation. However, Piran et al teach a similar method wherein the preferred surface comprises magnetic particles (Column 8, lines 58-60) and wherein separation is via a magnet (their immobilization surface comprises particles magnetic (Column 9, lines 5-7). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the preferred magnetic particle and magnet separation of Piran et al to the surface of Ullman et al. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success based on the well known practice as taught by Piran et al (Column 3, lines 34-47).

8. Claims 19, 20, 41 & 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ullman et al (U.S. Patent No. 6,797,481, filed 17 October 2000) in view of Baez et al (U.S. Patent No. 6,511,809, filed 16 May 2001).

Regarding Claims 19, 20, 41 & 42, Ullman et al teach the antibody is labeled with a nucleic acid label, but they are silent regarding the nucleic acid being DNA and/or RNA.

However Baez et al teach the similar method wherein DNA and RNA function as nucleic acid labels (Column 5, Lines 35-37). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the DNA label of Hendrickson et al with the RNA as taught by Baez et al. One of ordinary skill in the art would have been motivated to do so based on the equivalent functionality taught by Baez et al (Column 5, lines 35-37).

9. Claims 11, 21, 33 & 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ullman et al (U.S. Patent No. 6,797,481, filed 17 October 2000) in view of Hendrickson et al (Nucleic Acids Research, 1995, 522-529).

Regarding Claim 11, 21, 33 & 43, Ullman et al teach the method wherein the label is an amplifiable nucleic acid but they do not specifically teach amplification of the label via PCR. However, Hendrickson et al teach a similar nucleic acid-labeled antibody wherein the label is amplified via PCR to provide "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the PCR amplification of Hendrickson et al to the nucleic acid label of Ullman et al. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success and for the expected benefit of "ultra-sensitive" multianalyte detection as taught by Hendrickson et al (Abstract).

Hendrickson et al further teach nucleic acid labeled-antibodies for detection of analytes specifically bound to the antibodies via PCR amplification of the nucleic acid label. While they do not specifically teach the nucleic acid is selected so as to not represent a sequence naturally found in the sample, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to select non-sample sequences because amplification of the label could also amplify sample sequences thereby leading to false positive detection of the antibody-bound analyte.

Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Boguslaski et al (U.S. Patent No. 4,134,792, issued 16 January 1979) teach a method of analyte detection via sequential saturation in heterogeneous formats (Column 10, line52-Column 11, line 5).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

12. No claim is allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

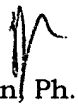
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.



BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
June 21, 2006